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XXIII. *Of the House-Swallow, Swift, and Sand-Martin*.*
By the Rev. Gilbert White, in Three Letters to the Hon.
Daines Barrington, F. R. S.

L E T T E R I.
 OF THE HOUSE-SWALLOW.

DEAR SIR,

Selborne, Jan. 29, 1775.

Redde, Mar. 16,
 1775.

THE house-swallow, or chimney-fallow, is undoubtedly the first comer of all the British *hirundines*; and appears in general on or about the 13th of April, as I have remarked from many years observation. Not but now and then a straggler is seen much earlier; and in particular, when I was a boy, I observed a swallow, for a whole day together, on a sunny warm Shrove-tuesday, which day could not fall out later than the middle of March, and often happens early in February. It is worth remarking, that these birds are seen first about lakes and mill-ponds: and it is also very particular, that if these early visitors happen to find frost and snow, as was the case in the two dreadful springs of 1770 and 1771, they immediately withdraw for a time. A circumstance this much more in favour

* See an account of the House-Martin by the same gentleman, in *Phil. Transf.* vol. LXIV. p. 196.

hiding than migration; since it is much more probable, that a bird should retire to its *bybernaculum* just at hand, than return for a week or two only to warmer latitudes. This swallow, though called the chimney-swallow, by no means builds altogether in chimneys; but often within barns and out-houses, against the rafters: and so she did in Virgil's time:

——— “ *Antè*

“ *Garrula quàm tignis nidos suspendat hirundo.*”

In Sweden she builds in barns, and is called *ladu fwala*, the barn-swallow. Besides, in the warmer parts of Europe, there are no chimneys to houses except they are English-built. In these countries she constructs her nest in porches and gateways, galleries, and open halls. Here and there a bird may affect some odd, peculiar place; as we have known a swallow build down the shaft of an old well, through which chalk was formerly drawn up, for the purposes of manure; but in general with us, this *hirundo* breeds in chimneys, and loves to haunt those stacks where there is a constant fire, no doubt for the sake of warmth. Not that it can subsist in the immediate shaft where there is a fire; but prefers one adjoining to that of the kitchen, and disregards the perpetual smoke of that funnel, as I have often observed with some degree of wonder. Five or six or more feet down the chimney does this little bird begin to form her nest about the middle of May, which consists, like that of the house-martin, of a crust or shell, composed of dirt and mud, mixed with short pieces of straw, to render it tough and permanent;

permanent; with this difference, that whereas the shell of the martin is nearly hemispheric, that of the swallow is open at the top, and like half a deep dish. This nest is lined with fine grasses and feathers, which are often collected as they float in the air. Wonderful is the address which this adroit bird shews all day long in ascending and descending, with security, through so narrow a pass. When hovering over the mouth of the funnel, the vibrations of her wings, acting on the confined air, occasion a rumbling like thunder. It is not improbable, that the dam submits to this inconvenient situation so low in the shaft, in order to secure her broods from rapacious birds, and particularly from owls, which frequently fall down chimnies, perhaps in attempting to get at these nestlings. The swallow lays from four to six white eggs, dotted with red specks; and brings out her first brood about the last week in June, or the first week in July. The progressive method by which the young are introduced into life is very amusing. First they emerge from the shaft with difficulty enough, and often fall down into the rooms below. For a day or so they are fed on the chimney-top; and then are conducted to the dead leafless bough of some tree, where, sitting in a row, they are attended with great assiduity, and may then be called *perchers*. In a day or two more they become *flyers*, but are still unable to take their own food; therefore they play about near the place where the dams are hawking for flies; and when a mouthful is collected, at a certain signal given, the dam and the nestling advance
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rising towards each other, and meeting at an angle; and the young one all the while uttering such a little quick note of gratitude and complacency, that a person must have paid very little regard to the wonders of nature that has not often remarked this feat. The dam betakes herself immediately to the business of a second brood, as soon as she is disengaged from her first; which at once associates with the first broods of house-martins, and with them congregates, clustering on funny roofs, towers, and trees. This *hirundo* brings out her second brood towards the middle and end of August. All the summer long is the swallow a most instructive pattern of unwearied industry and affection! For, from morning to night, while there is a family to be supported, she spends the whole day in skimming close to the ground, and exerting the most sudden turns and quick evolutions. Avenues and long walks under hedges, pasture fields and mown meadows where cattle graze, are her delight, especially if there are trees interspersed; because in such spots insects most abound. When a fly is taken a smart snap from her bill is heard, resembling the noise at the shutting of a watch-case; but the motion of the mandibles is too quick for the eye. The swallow, probably the male bird, is the *excubitor* to the house-martins, and other little birds, announcing the approach of birds of prey: for as soon as an hawk appears, with a shrill alarming note, he calls all the swallows and martins about him, who pursue in a body, whilst they buffet and strike their enemy till they have driven him from the village, dart-
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ing down from above on his back, and rising in a perpendicular line in perfect security. This bird also will sound the alarm, and strike at cats, when they climb on the roofs of houses, or otherwise approach their nests. Each species of *hirundo* drinks as it flies along, sipping the surface of the water; but the swallow alone *washes* on the wing, by dropping into a pool for many times together. The swallow is a delicate songster, and in soft weather sings both perching on trees and on chimney tops and flying: is also a bold ranger to distant downs and commons even in windy weather, which the other species seem much to dislike; nay, even frequenting exposed sea-port towns, and making little excursions over the salt-water. Horse-men, on wide downs, are often closely attended by a little party of swallows for miles together, which plays before and behind them, sweeping around and collecting all the skulking insects that are roused by the trampling of the horses feet: when the wind blows hard, without this expedient, they are often forced to settle to pick up their lurking prey. This species feeds much on little *coleoptera* as well as on grass and flies; and often settles on dug grounds for gravel, to grind and digest its food. Before they depart, for some weeks, to a bird, they forsake houses and chimnies, and roost in trees, and usually withdraw about the beginning of October, though some few stragglers may appear at times to the first week in November. Some few pairs haunt the new and open streets of London next the fields; but do not enter, like the house-martins,

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the close and crowded parts of the city. Both male and female are distinguished from their congeners by the length and forkedness of their tails. They are undoubtedly the most nimble of all the species; and when the male pursues the female in amorous chace, they then go beyond their usual speed, and exert a rapidity almost too quick for the eye to follow.

After this circumstantial detail of the life and discerning *σοφην* of the swallow, I shall add for your farther amusement, an anecdote or two not much in favour of her sagacity. A certain swallow built for two years together on the handles of a pair of garden-sheers, that were stuck up against the boards in an out-house; and, what is stranger still, another bird of the same species built its nest on the wings and body of an owl that happened by accident to hang dead and dry from the rafter of a barn. This owl, with the nest on its wings, and with eggs in the nest, was brought as a curiosity worthy the most elegant private museum in Great Britain. The owner, struck with the oddity of the sight, furnished the bringer with a large shell or conch, desiring him to fix it just where the owl hung. The person did as he was ordered; and the following year a pair, probably the same pair, built their nest in the conch, and laid their eggs. The owl and the conch make a strange grotesque appearance, and are not the least curious specimens in that wonderful collection of art and nature.

Thus is instinct in animals, taken the least out of its way, an undistinguishing, limited faculty, and blind to

every circumstance that does not immediately respect self-preservation, or lead at once to the propagation or support of their species. I am, with all respect, &c.

L E T T E R II.

Of the SWIFT, or BLACK MARTIN.

DEAR SIR,

Selborne, Sept. 28, 1774.

AS the *Swift* or *Black Martin* is the largest of the British *hirundines*, so it is undoubtedly the latest comer: for I remember but one instance of its appearing before the last week in April; and in some of our late frosty, harsh springs it has not been seen till the beginning of May. This species usually arrives in pairs. The swift, like the sand-martin, is very defective in architecture, making no crust or shell for its nest; but forming it of dry grasses and feathers, very rudely and inartificially put together. With all my attention to these birds I have never been able to discover one in the act of collecting or carrying in materials: so that I have suspected (since their nests are exactly the same) that they sometimes usurp upon the house-sparrows and expel them, as sparrows do the house and sand-martin; well remembering that I have seen them squabbling together

gether at the entrance of their holes, and the sparrows up in arms and much disconcerted at these intruders. And yet I am assured, by a nice observer in such matters, that they do collect feathers for their nests in Andalusia; and that he has shot them with such materials in their mouths. Swifts, like sand-martins, carry on the business of nidification quite in the dark, in crannies of towers and steeples, and upon the tops of the walls of churches under the roof; and therefore cannot be so narrowly watched as those species that build more openly; but from what I could ever observe, they begin nesting about the middle of May, and I have remarked, from eggs taken, that they have sat hard by the ninth of June. In general they haunt high buildings, churches, and steeples, and build only in such; yet in this village some pairs frequent the lowest and meanest cottages, and educate their young under those thatched roofs. We remember but one instance where they bred out of buildings; and that is in the sides of a deep chalk-pit near the town of Odiham in this county*, where we have seen many pairs entering the crevices and skimming and squeaking round the precipices. As I have regarded these amusive birds with great attention, if I should advance something new and peculiar with respect to them, and different from all other birds, I might perhaps be credited; especially as my assertion is the result of many years exact observation. The fact that I would advance is, that swifts *tread* or copulate on the wing: and I could

* Viz. Hampshire.

with any nice observer, that is startled at this supposition, to use his own eyes, and I think he will soon be convinced. In another class of animals, *videlicet*, the *insect*, nothing is so common as to see the different species of many *genera* in conjunction as they fly. The swift is almost continually on the wing; and as it never settles on the ground, on trees, or roofs, would seldom find opportunity for amorous rites, was it not enabled to indulge them in the air. If any person would watch these birds on a fine morning in May, as they are sailing round at a great height from the ground, he would see every now and then one drop on the back of another, and both of them sink down together for many fathoms, with a loud piercing shriek. This I take to be the juncture when the business of generation is carrying on. As the swift eats, drinks, collects materials for its nest, and, as it seems, propagates on the wing; it appears to live more in the air than any other bird, and to perform all functions there, save those of sleeping and incubation. This *hirundo* differs widely from its congeners, in laying invariably but *two eggs* at a time, which are milk-white, long, and peaked at the small end; whereas the other species lay at each brood from *four to six*. It is a most alert bird, rising very early, and retiring to rest very late, and is on the wing, in the height of summer, at least sixteen hours. In the longest days it does not withdraw to rest till a quarter before nine in the evening, being the latest of all day-birds. Just before they retire, whole groups of them assemble in the air, and squeak and shoot about
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with wonderful rapidity. But this bird is never so much alive as in sultry, thundry weather, when it expresses great alacrity, and calls forth all its powers. In hot mornings, several getting together in little parties, dash round the steeples and churches, squeaking as they go in a very clamorous manner: these, by nice observers, are supposed to be males serenading their sitting hens; and not without reason, since they never squeak till they come close to the walls or caves; and since those within utter at the same time a little inward note of complacency. When the hen has sat hard all day, she rushes forth just as it is almost dark, when she stretches and relieves her weary limbs, and snatches a scanty meal for a few minutes, and then returns to her duty of incubation. Swifts when wantonly and cruelly shot, while they have young, discover a little lump of insects in their mouths, which they pouch and hold under their tongue. In general they feed in a much higher district than the other species; a proof that gnats and other insects do also abound to a considerable height in the air. They also range to great distance, since loco-motion is no labour to them, who are endowed with such vast powers of wing. Their powers seem to be in proportion to their levers; and their wings are longer in proportion than those of almost any other bird. When they mute, or ease themselves, in flight, they raise their wings, and make them meet over their heads. At some certain times in the summer I had remarked, that swifts were hawking low for hours together, over pools and streams; and could
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not help enquiring into the object of their pursuit, that induced them to descend so much below their usual range. After some trouble, I found that they were taking *phryganeæ*, *ephemeræ*, and *libellulæ* (cadew-flies, may-flies, and dragon-flies), that were just emerged out of their aurelia-state. I then no longer wondered that they should be so willing to stoop for a prey, that yielded them such plentiful and succulent nourishment. They bring out their young about the middle or latter end of July; but as these never become perchers, nor, that ever I could discern, are fed on the wing by their dams, the coming forth of the young is not so notorious as in the other species. On the 30th of June last, I untiled the eaves of a house where many pairs build, and found in each nest only *two* naked, squab *pulli*. On the eighth of July I repeated the same enquiry, and found they had made very little progress towards a fledged state; but were still naked and helpless. From whence we may conclude, that birds, whose way of life keeps them perpetually on the wing, would not be able to quit their nest till the end of the month. Swallows and martins, that have numerous families, are continually feeding them every two or three minutes; while swifts, that have but two young to maintain, are much at their leisure, and do not attend on their nests for hours together. Sometimes they pursue and strike at hawks that come in their way; but not with that vehemence and fury that swallows express on the same occasion. They are out all day long in wet days, feeding about, and disregarding still rain: from
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whence two things may be gathered; first, that many insects abide high in the air, even in rain; and next, that the feathers of these birds must be well preened to resist so much wet. Windy, and particularly windy weather with heavy showers, they dislike; and on such days withdraw, and scarce ever are seen. There is a circumstance respecting the *colour* of swifts, which seems not to be unworthy our attention. When they appear in the spring they are all over of a glossy, dark, foot-colour, except their chins, which are white; but by being all day long in the sun and air they become quite weather-beaten and bleached before they depart; and yet they return glossy again in the spring. Now if they pursue the sun into lower latitudes, as some suppose, in order to enjoy a perpetual summer, why do they not return bleached? Do they not rather, perhaps, retire to rest for a season, and at that juncture moult and change their feathers, since all other birds are known to moult soon after the season of breeding? Swifts are very anomalous in many particulars, dissenting from all their congeners not only in the number of their young, but in breeding but *once* in a summer; whereas all the other British *hirundines* breed invariably *twice*. It is past all doubt, that swifts can breed but once, since they withdraw in a very short time after the flight of their young, and some time before their congeners bring out their second broods. We may here remark, that as swifts breed but *once* in a summer, and only *two* at a time, and the other *hirundines* twice, the latter, who lay from *four* to

six eggs, increase at an average five times as fast as the former. But in nothing are swifts more singular than in their early retreat. They retire, as to the main body of them, by the 10th of August, and sometimes a few days sooner; and every straggler invariably withdraws by the 20th, while their congeners, all of them, stay till the beginning of October, many of them stay all through the month, and some occasionally to the beginning of November. This early retreat is mysterious and wonderful, since that time is often the sweetest season in the year. But what is more wonderful, they retire still earlier in the most southerly parts of Andalusia, where they can be no ways influenced by any defect of heat; or, as one might suppose, by any defect of food. Are they regulated in their motions with us by a failure of food? or by a propensity to moulting? or by a disposition to rest after so rapid a life? or by what? This is one of those incidents in natural history that not only baffles our searches, but almost eludes our guesses! These *birundines* never perch on trees or roofs, and so never congregate with their congeners. They are fearless while haunting their nesting places; are not to be scared with a gun; and are often beaten down with poles, as they stoop to go under the eaves. They are also much infested with those pests to the whole genus, called *hippoboscæ birundinis*; and often wriggle and scratch themselves in their flight to get rid of these clinging annoyances. Swifts are no songsters, and have only one harsh screaming note; yet there are ears to which that note is not displeasing from

an agreeable affociation of ideas, fince that note never occurs but in the moft lovely fummer weather. They never fettle on the ground but through accident, and when down can hardly rife, on account of the fhortnefs of their legs and the length of their wings : neither can they walk, but only crawl ; but they have a ftrong grafp with their feet, by which they cling to walls. Their bodies being flat, they can enter into a very narrow crevice ; and where they cannot pafs on their bellies, they will turn up edge-ways. The particular formation of the fwift's foot difcriminate that bird from all the Britifh *hirundines*, and indeed from all other known birds, the *hirundo melba*, or great white-bellied fwift of Gibraltar, excepted ; for it is fo difpofed as to carry *omnes quatuor digitos anticos*. Befides, the leaft toe, which fhould be the back toe, confifts only of one bone alone ; and the other three only of two apiece. A conftruction moft rare and peculiar ; but nicely adapted to the purpofes in which their feet are employed. This, and fome peculiarities attending the noftrils and under mandible, have induced a difcerning naturalift^(a) to fuppofe, that this fpecies might constitute a *genus per fe*. In London, a party of fwifts frequent the Tower, playing and feeding over the river juft below the bridge : others haunt fome of the churches of the Borough next the fields ; but do not venture, like the houfe-martin, into the clofe, crowded parts of the town. The Swedes have beftowed a very pertinent

(a) JOHN ANTONY SCOPOLI, of Carniola, M. D.

name on this swallow, calling it *ring swala* from the perpetual *rings* or circles that it takes round the scene of its nidification. I am, &c.

L E T T E R III.

Of the SAND-MARTIN, or BANK-MARTIN.

DEAR SIR,

Selborne, Feb. 26, 1774-

THE Sand-martin, or Bank-martin, is by much the least of any of the British *birundines*, and as far as ever we have seen, the smallest known *birundo*; though BRISSON asserts that there is one much smaller, and that is the *birundo esculenta*. But it is much to be regretted, that it is scarce possible for any observer to be so full and exact as he could wish, in reciting the circumstances attending the life and conversation of this little bird; since it is *fera naturâ*, at least in this part of the kingdom, disclaiming all domestic attachments, and haunting wild heaths and commons where there are large lakes, while the other species, especially the swallow and house-martin, are remarkably gentle and domesticated, and never seem to think themselves safe but under the protection of man. Here are in this parish, in the sand-pits and banks of the lakes of Woolmer Forest, several colonies of these birds; and yet they are never seen in the village, nor do they at all frequent the cottages

tages that are scattered about in that wild district. The only instance, I ever remember, where this species haunts any building, is at the town of Bishop's Waltham in this county, where many sand-martins nestle and breed in the scaffold-holes of the back-wall of WILLIAM OF WICKHAM's stables; but then this wall stands in a very sequestered and retired enclosure, and faces upon a large and beautiful lake. And indeed this species seems so to delight in large waters, that no instance occurs of their abounding but near vast pools or rivers; and in particular, it has been remarked, that they swarm on the banks of the Thames, in some places below bridge. It is curious to observe with what different degrees of architectonic skill Providence has endowed birds of the same *genus* and so nearly correspondent in their general mode of life! For while the swallow and the house-martin discover the greatest address in raising and securely fixing cruxts or shells of loam as *cunabula* for their young, the bank-martin terebrates a round and regular hole in the sand or earth, which is serpentine, horizontal, and about two feet deep. At the inner end of this burrow does this bird deposit, in a good degree of safety, her rude nest, consisting of fine grasses and feathers, usually goose feathers, very inartificially laid together. Perseverance will accomplish any thing; though one would at first be disinclined to believe, that this weak bird, with her soft and tender bill and claws, should ever be able to bore the stubborn sand-bank without entirely disabling herself. Yet with these feeble instruments have I seen a pair of

them make good dispatch, and could remark how much they had scooped that day, by the fresh sand which ran down the bank, and was of a different colour from that which lay loose and bleached in the Sun. In what space of time these little artists are able to mine and finish these cavities I have never been able to discover, for reasons given above; but it would be a matter worthy of observation, where it falls in the way of any naturalist to make his remarks. This I have often taken notice of, that several holes, of different depths, are left unfinished at the end of summer. To imagine that these beginnings were intentionally made in order to be in greater forwardness for next spring, is allowing, perhaps, too much foresight and *rerum prudentia* to a simple bird. May not the cause of these *latebræ* being left unfinished arise from their meeting in those places with *strata* too hard, harsh, and solid for their purpose, which they relinquish, and go to a fresh spot that works more freely? Or may they not in other places fall in with a soil as much too loose and mouldering, liable to flounder, and threatening to overwhelm them and their labours?

One thing is remarkable, that after some years the old holes are forsaken, and new ones bored; perhaps because the old habitations grow foul and fetid from long use; or because they may so abound with fleas as to become untenable. This species of swallow, moreover, is strangely annoyed with fleas; and we have seen fleas, bed-fleas (*pulex irritans*) swarming at the mouths of these holes like bees on the stools of their hives. When they

they happen to breed near hedges and enclosures, they are dispossessed of their breeding holes by the house-sparrow, which is on the same account a fell adversary to house-martins. The following circumstance should by no means be omitted, that these birds do *not* make use of these caverns by way of *hybernacula*, as might be expected; since banks so perforated have been dug out with care in the winter, when nothing was found but empty nests. The sand-martin arrives much about the same time with the swallow, and lays, as she does, from four to six white eggs. But as this species is *cryptogame*, carrying on the business of nidification, incubation, and the support of its young, in the dark, it would not be so easy to ascertain the time of breeding, were it not for the coming forth of the broods, which appear much about the time, or rather somewhat earlier than those of the swallow. The nestlings are supported in common like those of the *congeners*, with gnats and other small insects; and sometimes they are fed with *libellulæ* (dragon-flies) almost as long as themselves. The last week in June, we have seen a row of these sitting on a rail near a great pool, as perchers, and so young and helpless, as easily to be taken by hand; but whether the dams ever feed them on the wing, as swallows and house-martins do, we have never yet been able to determine; nor do we know whether they pursue and attack birds of prey. These *hirundines* are no songsters, but rather mute, making only a little harsh noise when a person approaches their nests. They seem not to be of a sociable
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turn, never with us congregating with their *congeners* in the autumn. Undoubtedly they breed a second time, like the house-martin and swallow, and withdraw about Michaelmas. Though in some particular districts they may happen to abound, yet in the whole, in the South of England at least, is this much the rarest species. For there are few towns or large villages but what abound with house-martins; few churches, towers, or steeples, but what are haunted by some swifts; scarce a hamlet or single cottage-chimney that has not its swallow: while the bank-martins, scattered here and there, live a sequestered life among some abrupt sand-hills, and in the banks of some few rivers. These birds have a peculiar manner of flying; flitting about with odd jerks and vacillations, not unlike the motions of a butterfly. Doubtless the flight of all *hirundines* is influenced by, and adapted to, the peculiar sort of insects which furnish their food. Hence it would be worth enquiry to examine, what particular *genus* of insects affords the principal food of each respective species of swallow. Sand-martins differ from their *congeners* in the diminutiveness of their size and in their colour, which is what is usually called a mouse-colour. Near Valentia in Spain they are taken and sold in the markets for the table; and are called by the country people, probably from their desultory, jerking manner of flight, *papilion de Montagna*.

I am, with the greatest respect, &c.